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Graduate Management Project (GMP)

Measuring Access to Care Through Changes in the Composite Health Care System

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The purpose of this study is to demonstrate how to improve the measurement of access through changes in the Department of Defense's medical information system, the Composite Health Care System (CHCS). The research question is, "what percent of our beneficiaries who make contact with an appointment specialist are unable to receive an appointment?" Specific attention is given to how many beneficiaries try to get an appointment through the appointment specialist, only to be told there are no appointments available. This study found that in the month of January 1998 eleven percent of the TRICARE Prime enrollee callers could not get an appointment at Military Treatment Facilities (MTFs) located in the Colorado Springs area, also known as the Pikes Peak Region. In that same month, nine percent of the TRICARE Prime enrollee callers could not get an appointment at Evans Army Community Hospital (EACH). Medical Treatment Facilities currently have no method for measuring how many beneficiaries are turned-away other than through trial and error or through Military Health Service (MHS) Performance Report Card survey. This study recommends a method for measuring the number of beneficiaries denied appointments. Those recommendations come in the form of slight modifications to the existing information system, CHCS.

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ABSTRACT

The purpose of this study is to demonstrate how to improve the measurement of access through changes in the Department of Defense's medical information system, the Composite Health Care System (CHCS). The research question is "what percent of our beneficiaries who make contact with an appointment specialist are unable to receive an appointment?" Specific attention is given to how many beneficiaries try to get an appointment through the appointment specialist only to be told there are no appointments available. This study found that in the month of January 1998 eleven percent of the TRICARE Prime enrollee callers could not get an appointment at Medical Treatment Facilities (MTFs) located in the Colorado Springs area, also known as the Pikes Peak Region. In that same month, nine percent of the TRICARE Prime enrollee callers could not get an appointment at Evans Army Community Hospital (EACH). Medical Treatment Facilities currently have no method for measuring how many beneficiaries are turned-away other than through trial and error or through the Military Health Service (MHS) Performance Report Card survey. This study recommends a method for measuring the number of beneficiaries denied appointments. These recommendations come in the form of slight modifications to the existing information system, CHCS.

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Preferred Provider Network (PPN)

Primary Care Manager (PCM)

Science Applications International Corporation (SAIC)

TRICARE (Tri-service triple option managed care plan)

Unit Status Report (USR)

GLOSSARY

Beneficiary - Anyone eligible for military healthcare, including active duty, retired military and their family members (Tilson, 1996).

CHAMPUS - Also known as TRICARE Standard, Civilian Health and Medical Program of the Uniformed Services is a federal cost sharing program which helps military families and retirees pay for civilian health care. TRICARE is a CHAMPUS program (Tilson, 1996)

Design Process Change (DPC) - In this context refers to the specific software changes that must be made to support the request for changes to the existing or future versions of CHCS. Request for changes are most always made by the user or using service.

Enrollee - An individual enrolled in a managed care health care plan (Kongstvedt, 1996).

Enrollment - Signing up for TRICARE Prime at TRICARE Services Center (TSC). Enrollment is for one year (Tilson, 1996), and the enrollee is locked-in for twelve months (TRICARE Administrative Guide).

FEHBP - Federal Employees Health Benefits Program is a program that provides health benefits to civilian federal employees (Kongstvedt, 1996).

Health Care Financing Administration (HCFA) - This federal agency oversees all aspects of health financing for Medicare and also oversees the Office of Managed Care (Kongstvedt, 1996).

Health Maintenance Organization (HMO) - An organization that provides health care to enrolled members in return for a preset amount of money on a per member per month (PMPM) basis (Kongstvedt, 1996).

Managed Care - A system in which patients do not shop for their care. Primary Care Managers (PCMs) act as patient advocates by monitoring care and avoiding unnecessary care. Such systems negotiate discount fees with providers stressing wellness and fitness through health promotion and preventive medicine (Tilson, 1996; Kongstvedt, 1996).

Medical Treatment Facility (MTF) - In this context refers to military hospitals and clinics.

Lead Agent - Lead Agents are military personnel responsible for the oversight of a specific Managed Care Support (MCS) Region. A Lead Agent represents the interests of the MTFs in the MCS Region and work with the MSC contractor's Executive Director for that Region to ensure that the needs and expectations of that Region are being satisfied (TRICARE Administrative Guide).

Preferred Provider Network (PPN)- A group of civilian practitioners organized by the regional TRICARE contractor to supplement military direct care in TRICARE Prime and

Extra. In exchange for contractors referrals, PPN members discount fees (to CHAMPUS allowable or less) for TRICARE users, and file claims for patients. Preferred Provider Network members must meet the same professional standards as MTF providers (Kongstvedt, 1996).

Primary Care Manager (PCM) - A patient's primary provider for any medical need, who makes referrals for tests/specialty care, and monitors each case to ensure adequacy/continuity of care while avoiding unneeded care. This is usually a physician but some are Physician Assistants (PAs) or Nurse Practitioners (NPs). Primary Care Managers include internists, family practitioners, pediatricians, general practitioners, obstetricians/gynecologists. These are providers who are selected by the TRICARE Prime beneficiaries or are assigned by an MTF Commander to provide primary care. In TRICARE Prime PCMs will be a part of the MTF staff whenever possible (Tilson, 1996; Kongstvedt, 1996).

TRICARE Extra - Voluntary option that patients can choose case-by case, merely by using the contractor's PPN. No enrollment is required for this plan (Tilson, 1996).

TRICARE Prime - Health Maintenance Organization (HMO) type option offering true managed care, centered in the MTF, supplemented by a contractor's PPN. One must enroll for this plan (Tilson, 1996).

TRICARE Standard - Same as standard CHAMPUS were the beneficiary can pick any provider that accepts CHAMPUS reimbursement. Beneficiaries can also chose other providers that do not accept CHAMPUS if they are willing to pay out-of pocket for their care or utilize other insurance coverage they may have. No enrollment is required for this plan (Tilson, 1996).

TRICARE Service Center (TSC) - A one stop shopping center for beneficiaries, operated by the TRICARE contractor. This office is staffed by the Health Care Finders (HCFs) and Beneficiary Service Representatives who assist all TRICARE eligible beneficiaries with the health care needs (TRICARE Administrative Guide).

TriWest Healthcare Alliance (TriWest) - A managed care organization who's primary mission is to provide access to cost-effective timely, high quality health care to the beneficiaries of TRICARE in the Central Region. TriWest was awarded the five year TRICARE Managed Care Support (MCS) contract for the Central Regions on June 27, 1996. The contract supports MTFs throughout the region. Doctors and hospitals in the TriWest's provider network offer three health care benefits options: TRICARE Prime; TRICARE Extra; and TRICARE Standard (TRICARE Administrative Guide).

INTRODUCTION

In response to rising costs of health care, which consisted of nearly 15% of the Gross National Product (GNP) (Feldstein, 1994), in 1994 Congress implemented a phased conversion from CHAMPUS (Civilian Health and Medical Program of the Uniformed Services) to a new managed care plan called TRICARE ("CHAMPUS Revamped," 1996). TRICARE is the Department of Defense (DoD) medical program that provides care for all beneficiaries: active duty (AD), active duty family members (ADFM), retirees and their family members, and sole survivors. In a post cold war era of defense budget cuts, TRICARE is seen by some as the last hope of keeping the Military Health System (MHS) viable through the concept of managed care.

The TRICARE program follows the structures of managed care which focuses on striking a balance within the "Iron Triad" of cost, quality and access. Managed care is defined in an article from The Mercury, a newspaper published monthly by the U.S. Army Medical Command, as a "system in which patients need not shop for their own care. Primary Care Managers (PCMs) act as patient advocates, monitoring all care, avoiding needless care and referring patients to economical care sources. Such systems negotiate discount fees with providers; and stress keeping people healthy through health promotion and preventive medicine" (Noyes, 1995). TRICARE's goals are designed to improve readiness, expand access to care, maintain quality of care, and control costs for patients and taxpayers (Noyes, 1995). With specific reference to access, Harry Noyes emphasizes that the goal is to maximize nationwide availability to care by improving avenues to access such as the patient appointment and telephone systems (1995). The focus of this study is on one of the three variables of the Iron Triad, access. Specific attention is given to how a medical

treatment facility (MTF) can measure access by using the existing health care information system, the Composite Health Care System (CHCS).

Conditions Which Prompted the Study

Before discussing the conditions which prompted the study, it is necessary to describe the primary care access standards as published by the Office of the Secretary of Defense (Health Affairs) (OSD(HA)). The baseline requirements and maximum appointment waiting times for Prime Enrollees outlined in this document are stated as (1995, December):

a. Baseline requirements

1) Same day access to PCM services;

2) Travel time: 30 minutes from residence to delivery site (exceptions may be made in remote areas);

3) Office wait: 30 minutes for non-emergency situations;

4) Night and weekend coverage: provided for urgent health care needs; and

5) Emergency services: arranged for in the community and available 24 hours a day, seven days a week. Emergency services are not a substitute for after-hours primary care or urgent care access.

b. Maximum appointment waiting times

1) Acute visit: one day;

2) Routine visit: one week;

3) Well visit: four weeks; and,

4) Specialty visit: four weeks.

There are several areas which generate a need for MTFs to measure access more accurately and quantitatively. The four conditions which prompted this study are: 1) the current health care information system, CHCS, does not currently capture all data necessary to measure access; 2) current measuring techniques do not capture the entire access picture; 3) current economic conditions demand efficiency; and, 4) a need for a more immediate measurement of access demands without having to use a survey tool or having to wait on reports from higher echelons in order to react.

CHCS

The first condition which prompted this study is that CHCS does not capture all the data necessary to measure access. Even though CHCS is a state-of-the-art medical information system (Van Ryan, 1997), it does not meet all the using MTF's needs. However, with changes, CHCS can capture valuable data needed to measure access more accurately, specifically the accessibility of acute and routine appointments.

The Composite Health Care System is an automated, integrated medical information system developed by the Department of Defense (DoD) with Science Applications International Corporation (SAIC), the prime contractor. According to Sue Volek CHCS is the backbone of managed health care and is integral to the implementation of TRICARE (Volek, 1996). In a project profile published by SAIC on the internet, Gloria Kosman (1997) describes CHCS as:

> the world's largest and most advanced patient information system for the U.S. Department of Defense. The computer system links more than 650 military hospitals and clinics worldwide and serves over 9 million patients. CHCS focuses on the bottom line of optimal patient care by providing the

> smooth transfer and storage of information, maintaining it up-to-date, reliable, and instantaneously available to authorized users. CHCS automates and integrates the functions of hospital staff by improving communications among physicians, nurses, clinicians, technicians, ancillary services and administrators. [para 1]

The Composite Health Care System is a multi-faceted system, composed of nine integrated modules: patient administration, scheduling, pharmacy, laboratory, radiology, dietetics, medical records, quality assurance, a clinical module for patient care and results retrieval, and electronic mail (Volek, 1996). The scheduling module, which is also known as the Patient Appointment and Scheduling (PAS) module is the focal point of this study.

In order for appointment specialists to schedule appointments or scan for availability of appointments, they must first access the "Booking Search Criteria" screen which is located in the PAS's "Booking Appointments" module. Currently in PAS, appointment specialists can scan appointment schedules by using certain search criteria. For example, a search for available appointments can be done by: 1) selecting a certain clinic; 2) selecting a certain provider; 3) selecting a start or stop date for the appointment; 4) selecting acceptable days of the week matrix; 5) selecting an appointment type such as Acute, Routine, Follow-up; or by, 6) selecting more than one criteria, etc. ("PAS," 1994). Figure 1 illustrates the PAS screen that is seen by appointment specialists. The appointment specialists can search for appointments by choosing the criteria desired and "tagging" the criteria with a "+" or "*".

COMPUTER BOOKING SCREEN IN PATIENT APPOINTMENTS AND SCHEDULING
FIGURE 1

BOOKING SEARCH CRITERIA	
Patient:	**FMP/SSN:**
Clinic:	**Appt Type:**
Clinic Phone:	
Provider:	**Service:**
Time Range: 0001 to 2400	**Duration:**
Dates: 02 Jan 1998 to 02 Mar 1998	**Days of Week:**
Appointment Type **Provider** **Clinic** **Dates** **Patient** **Time Range** **Days of Week** **Duration** **+ Service**	
Select (C)hange Search Criteria, (B)rowse, (W)ait List Add, (M)ultiple Clinic, (F)amily, or (Q)uit: C//	

When booking appointments, the patients name may be selected as search criterion, but it is not required. The current CHCS scheduling module does not capture that portion of the patient population that was refused access because it allows appointment specialists to search the system without names and subsequently, the appointment specialist can refuse appointments without giving explanations or making notations in the system regarding that refusal.

When making changes to improve quality or enhance a function, the key is to focus on process. Figure 2 illustrates the process of scheduling appointments. Step 1 is accessing the "Clerk Scheduling Menu." From the "Clerk Scheduling Menu" the appointment

specialist chooses "Booking Appointments" module from the menu selection. From there the "Booking Search Criteria" screen appears. The specialist then chooses the criteria for the search. If an appointment is available then an appointment is booked. If there are no available appointments then the specialist "quits" the "Booking Search Criteria" screen and returns directly to the "Clerk Scheduling Menu." Step 2 is shaded because this is one area that exists in the process that should be changed in order to recognize every patient encounter.

PROCESS FOR SCHEDULING APPOINTMENTS IN THE CURRENT CHCS PROGRAM
FIGURE 2

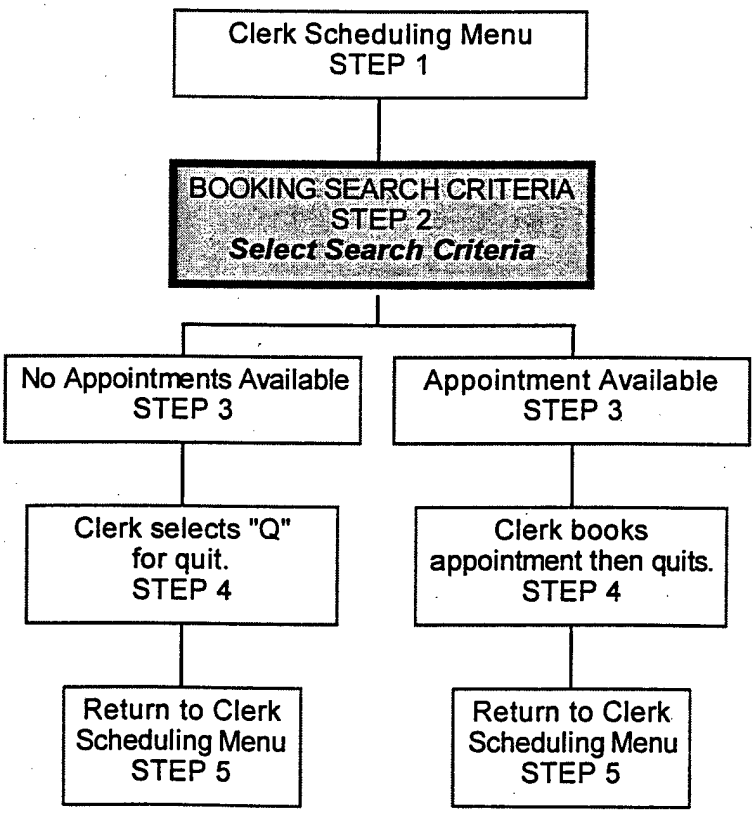
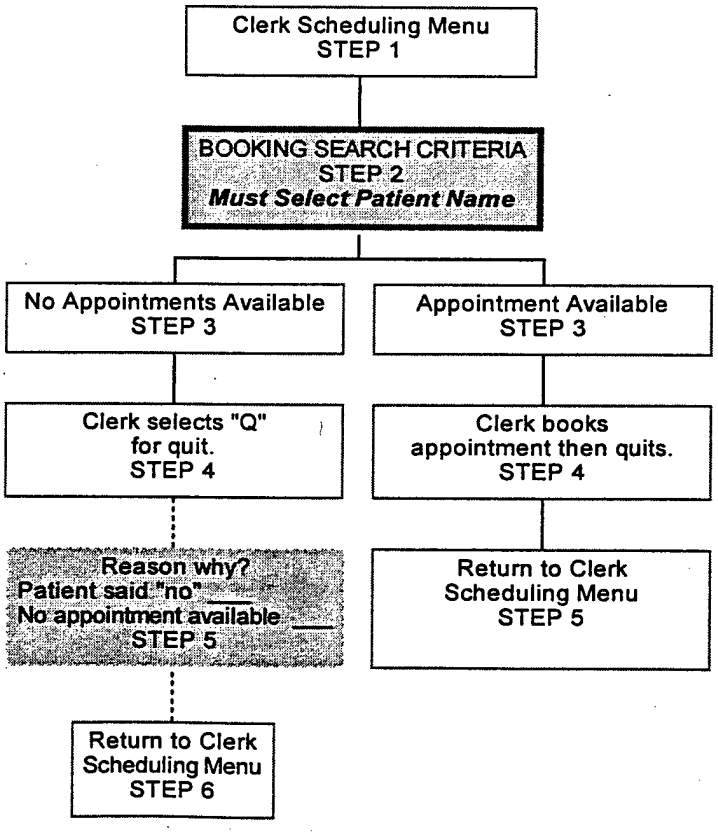


Figure 3 displays proposed changes to the process of scheduling appointments. If the scheduling module were designed where: 1) the name of the patient must be entered and

tagged in the system before searching for appointments; and 2) where the system requires that the appointment specialist must note why the patient could not get an appointment before "quitting" the "booking appointment" module. Figure 3 illustrates an additional step (STEP 5). This step would be a prompt to the specialist from the CHCS program to answer why the appointment was not booked. If this change were made access data could be captured without the need for a survey tool. Attempts have been made by the MHS and individual departments to determine patient satisfaction with appointment accessibility.

PROCESS FOR SCHEDULING APPOINTMENTS WITH CHANGES CHCS PROGRAM
FIGURE 3



Current Reporting Tools

There are two reporting tools used to gage success with regard to access within the MTF. Those tools are: 1) Clinical Support Division's (CSD's) Unit Status Report (USR) which is internally generated within Evans Army Community Hospital (EACH) by scanning the clinics templates for availability of appointments; and 2) Health Affairs' (HA) MHS Performance Report Card which is externally generated through the use of a customer satisfaction survey and by the use of Ambulatory Data System (ADS) bubble sheets generated and forwarded by each MTF in the DoD.

The USR reports access to acute and routine appointments with the assistance of CHCS. The methodology for measuring access is described in the January 1998 USR as the following: 1) Primary Care Clinics - Data is extracted daily from CHCS appointment module, based on the availability of the next 5 Acute and Routine appointments, respectively; 2) Specialty Clinics - Data is extracted from CHCS electronic consult tracking report. This report only tracks consults generated internally and booked by that clinic, i.e. Family Practice to Surgery ("Unit Status," 1998). While this method does tell whether there is a future appointment available, it does not indicate if patients were turned away by the appointment specialist or if the patient refused an appointment. For example, a caller may ask for an acute appointment with their PCM. If there are no appointments available with that particular PCM in the next 24 hours, will the caller: 1) take the next available appointment with that PCM two days later; 2) take an appointment with another PCM within the next 24 hours; or, 3) choose not to take any of the appointments and go straight to the Emergency Room? These are questions that cannot be answered by this internally generated report. It should be mentioned that this report is the best method that EACH CSD

administrators have to anticipate problems and take timely corrective action in order to improve overall patient satisfaction with access.

The other reporting tool is the MHS Performance Report Card. The report card is comprised of five sections: Access, Quality, Utilization (cost), Health Behaviors, and Health Status ("MHSS...Handbook," 1997). The initial purpose of the performance measures, developed in December of 1995, was to provide health care managers at the corporate level (HA and the service Surgeons General (SGs)) with a measurement tool. This tool was used to evaluate the effectiveness of the MHS during its transition to a managed care environment ("MHSS...Background," 1997). In June of 1996, the report card was expanded to allow the MHS corporate or aggregate performance measures to be examined at the MTF level. The capability permitted managers at all levels to compare and analyze performance at the point where health care services are delivered. In order for the MHS Performance Report Card to report patient satisfaction with access, HA surveys customer satisfaction. The survey questions that patients see are listed below ("MHSS...Handbook," 1997):

1. Satisfaction with Access to Appointments is defined as an average response to four specific survey questions (question #47 (g - j) on the actual survey. The survey question is:

Please rate the following aspects of the health care you received at the MILITARY facilities in the past 12 months (Excellent, Very Good, Good, Fair or Poor):

g. Ease of making an appointment for health care by phone.

h. Length of time you wait at office to see the provider.

i. Length of time you wait between making an appointment for routine care and the day of your visit.

j. Availability of health care information or advice by phone.

Respondents who averaged between Good and Excellent were considered meeting access standards. Respondents who average below Good were recorded as not meeting access standards. The following formula is used to calculate the percentage of MTF users who were satisfied with access to appointments: (Number of respondents meeting access)/(All respondents in the MTF catchment area with at least one visit to a military facility in the past 12 months). Performance report card goal is 95%.

2. Satisfaction with Access to System Resources is defined as the average response to the following seven survey questions #47 (a - f, k) on the actual survey. The survey question:

Please rate the following aspects of the health care you received at MILITARY facilities in the past 12 months (Excellent, Very Good, Good, Fair or Poor):

a. Convenience of location of treatment.

b. Convenience of hours.

c. Access to health care whenever you need it.

d. Access to a specialist if you need one.

e. Access to hospital care if you need it.

f. Access to medical care in an emergency.

k. Services available for getting prescriptions filled.

Respondents who averaged between Good and Excellent were considered meeting access standards. Respondents who average below Good were recorded as not meeting

access standards. The following formula is used to calculate the percentage of MTF users who were satisfied with access to appointments: (Number of respondents meeting access)/(All respondents in the MTF catchment area with at least one visit to a military facility in the past 12 months). Performance report card goal is 95%.

3. Meeting Appointment Waiting Standards is defined by regrouping the response to the following survey question #45 (b) on actual survey. The survey question is:

How long did you USUALLY wait between the day you made an appointment for care and the day you actually saw the MILITARY provider?

Respondents could choose: Same Day (24 hours), 1-3 Days, 4-7 Days, 8-14 Days, 15-30 Days, 31-60 Days, or More Than 61 Days. Respondents who reported "7 or less days" were considered meeting access standards. Respondents who reported "more than 7 days" were recorded as not meeting access standards. The following formula is used to calculate the percentage of MTF users who were satisfied with access to appointments: (Number of respondents meeting wait standards)/(All respondents in the MTF catchment area with at least one visit to a military facility in the past 12 months). Performance report card goal is 98%.

4. Prime Active Duty (AD) Enrollment Rate is defined as the percentage of AD personnel enrolled in TRICARE Prime and assigned a primary care manager. Enrollment status must also be properly transmitted into the Defense Eligibility Enrollment Reporting System (DEERS). The enrollment is based on the May 1997 enrollment reports submitted by Lead Agents (LA) to OASD(HA)/Health Services Financing. The rate is calculated by dividing the total number of AD enrolled by the total number of AD eligible beneficiaries in the MTF catchment area. Performance report card goal is 100%.

Areas 1 - 3 above are based upon responses from the Monthly Customer Satisfaction Survey conducted by HA. An extract from an actual performance report is displayed in Figure 4. Even though customer perception is a powerful tool for calculating success, is not timely and administrators cannot anticipate access problems nor can they immediately respond to prevent patient dissatisfaction.

EXTRACT FROM MHS REPORT CARD
FIGURE 4

Military Health System Performance Report Card
Evans ACH (0032)
Fort Carson, Colorado
January 1998

Area	Performance Measure	Updated	Actual	Goal	Status	Trend
Access	Satisfaction with Access to Appointments	Jan-98	76%	95%	Y	G-2%
	Satisfaction with Access to System Resources	Jan-98	80%	95%	Y	G-4%
	% Meeting Appt Waiting Stds	Jan-98	85%	98%	Y	N M C
	Prime AD Enrollment Rates	Jan-98	74%	100%	R	R-26%

Note 1: The column label updated reflects the report card in which the measure was last updated. Please refer to the handbook regarding the period the data covers.

Note 2: Trend displays the difference between current and previous report card results. Results are color coded to represent improvement (green) or movement away from desired outcome (red). No meaningful change (N M C) appears when no/ minor change is reflected in the trend.

Economic Conditions

In his master's thesis, dated May 28, 1996, Captain William Tilson explains the effort of the MHS to deliver more efficient and improved quality health care to the military beneficiary. The following table is a brief description of the evolution of the MHS and the initiatives that lead to TRICARE (Tilson, 1996). The initiatives demonstrate progression from a fee-for-service environment towards a managed care environment.

EVOLUTION OF THE MILITARY HEALTH SYSTEM
TABLE 1

INITIATIVE	YEAR	DESCRIPTION
CHAMPUS Civilian Health and Medical Program of the Uniformed Services	1966	Intended as a medical benefits program that cost shares charges for medically necessary treatment provided to eligible beneficiaries by civilian sources when services are not available from military direct.
PRIMUS Primary Care for the Uniformed Services	1985	Intended improvement upon the delivery of CHAMPUS funded care by establishing eight civilian-managed care outpatient clinics to improve access, reduce over utilization of MTFs and recapture CHAMPUS workload.
CRI CHAMPUS Reform Initiative	1988	Intended eliminate the practice of paying full charge, and shift the risk from DoD to healthcare contractors who agree to reduced fees under a provider network arrangement.
CAM Catchment Area Management	1989	Intended for the MTF commander to more appropriate determine the level and mix of in-house direct care and ensure that beneficiaries' needs were still met.
CCP Coordinated Care Program or Gateway to Care	1991	Intended to maximize cost effectiveness in the delivery of high quality health care based on the "gatekeeper" concept where patients are steered to the appropriate level of care by a primary care physician.
TRICARE Tri-service triple option managed care plan	1994	Intended to improve readiness, expand access to care, maintain quality of care and control costs for patients and tax payers. To become more precisely aligned with our civilian counter-parts in the managed care industry.

In this post cold war era that demands cuts in defense spending, TRICARE has become an initiative that embraces managed care principles of high quality and access at the lowest possible cost. Because TRICARE is vital to the MHS success, it has never been more important for our beneficiary population to be more than satisfied with military health care; they must be delighted. That delight must begin at point of contact with the system

and continue throughout the patient's entire enrollment. Success in patient satisfaction is more important today, since managed care is under the watchful eyes of the American people. So whether TRICARE or managed care is the "be-all and end-all" of our health care system, it has yet to be seen. What is known is that in his 1998 budget, President Clinton proposed more budget cuts in the form of downsizing 17 military hospitals and in decreasing or eliminating inpatient care in facilities (TRICARE, 1997). In a briefing, Colonel Fergeson, Chief of the Managed Care Division, U.S. Army Medical Command (MEDCOM), outlined both the trend since 1988 in MTF infrastructure reductions and the Army population drawdown. Those figures are displayed below:

MEDICAL TREATMENT FACILITIES INFRASTRUCTURE REDUCTION
TABLE 2

1988	1995	1999
14 OCONUS 33 CONUS	6 OCONUS 29 CONUS	5 OCONUS 24 OCONUS
47 TOTAL US ARMY MTFs LEFT	35 TOTAL US ARMY MTFs LEFT	29 TOTAL US ARMY MTFs LEFT

ARMY DRAWDOWN
PERCENT REDUCTIONS FROM FY 89 - FY 97
TABLE 3

BENEFICIARY POPULATION	AMEDD POPULATION	ARMY POPULATION
DECREASED 11 % SINCE FY 89	DECREASED 31% SINCE FY 89	DECREASED 36% SINCE FY 89

Additionally, beyond 1999, we expect more MTF reductions and personnel drawdowns to continue until the year 2003. Also what is known regarding defense health program (DHP) is that the HA Fiscal Year (FY) 98 budget was under funded by $279

million. Three noted factors contributed to the underfunded budget. Those factors are: 1) the increase funding for the CHAMPUS program ($168 million) as HA shifted to managed care contracts; 2) the underfunding of MTFs that equaled $78 million; and 3) the application of inflation indices which equaled $33 million (TRICARE, 1997). The TRICARE Executive Committee Meeting Minutes also reflected a significant funding shortfall ranging from approximately $780 million in FY 99 to over $1.3 billion in FY 03 (1997). Together with known problems in budgeting and the prediction of more downsizing and infrastructure reductions, a serious threat to beneficiary access is likely. As a result, beneficiaries' perception of quality care could erode as MTF waiting times increase or barriers to access increase. This perception of the erosion could easily be reflected in the results of the customer satisfaction survey: e.g. Satisfaction with Access to Appointments, Satisfaction with Access to System Resources, and Meeting Appointment Waiting Standards.

Predict Access Demands

As shown earlier, there are several tools currently used to indicate whether success is met with regard to access. But these tools do not use actual data from an appointment booking encounter. These reports do not count each caller not given an appointment. Rather, we rely almost entirely upon those who have accessed the system at least once in the last twelve months to indicate access satisfaction and whether the MTF met access standards for routine care ("MHS...Handbook." 1997). The report card data is not timely enough to assess problems in order to shift strategies.

Implications of this lack of timeliness are outlined in a report done by Captain Larry Fulton of the 1998 U. S. Army-Baylor Graduate Program in Healthcare Administration.

Fulton's report indicates that the MHS Performance Report Card (timely or not) drives future funding for the different branches of the services. The following is an excerpt of his report done in 1997:

> As the Military Health System adopts a business approach, increasing efforts to optimize cost, quality and access will rely heavily on processed data and inter-service comparisons. Recently, descriptive statistics on each branch of service resulted in the decision by the OASD(HA) to decrement each service based upon previously stated utilization goals of five percent decrease each year. The OASD(HA) based its decision upon service discharge rates (length of stay), and the Army alone was penalized $66 million (Kearns, 1997). The implications for meeting the stated standards of the other two components of the Iron Triad, quality and access, are clear: optimize or face additional scrutiny and potential sanctions (page 5).

The method used by CSD is more timely than that of the report card, but only tells whether an appointment is available. It does not indicate if the caller was able to get an appointment with their assigned PCM. Even with these tools, the question still remains, 'how can we better predict access to care in the Evans Army Community Hospital and adjust key processes to improve access to care?"

Statement of the Problem: The Research Question

The problem is how to improve the measurement of access to care. In this study the research question becomes, "what percent of our beneficiaries who make contact with an appointment specialist are unable to receive an appointment?" This study attempts to improve methodology of data collection to provide a more accurate and total picture of

appointment accessibility by researching the appointment scheduling process. This approach is one more dimension or aspect to access than is currently being provided by the EACH CSD Unit Status Report and by the highly visible and heavily weighted MHSS Performance Report Card.

At Evans Army Community Hospital, the Air Force Academy hospital, and Peterson Air Force Base clinic, the managed care contractor, TriWest Healthcare Alliance, books all the appointments for these facilities which are located in the Colorado Springs area or what is called the Pikes Peak Region. The automated outpatient appointment system, regardless if the system is operated in-house or with a contracted firm out side the organization, relies heavily on the appointment specialist being familiar with or having close contact with the clinics. The CHCS scheduling module is capable of creating hundreds of booking or appointment types (436). Each clinic is responsible for creating the appointment schedules or templates by using these various booking types.

The appointment specialist at TriWest accesses or scans the appointment schedules at the time an appointment is requested. If a requested appointment type (i.e. acute, routine or well visit) is available, the appointment specialist schedules the caller in that slot. If there is no appointment available the specialist has the option of cross booking into another team or with another provider (if that requested appointment type is available). There are times when a conflict can arise, such as when clinic personnel create too many slots for one type of appointment and not enough of another appointment type. This conflict is sometime referred to as an appointment type mix problem. Part of the problem stems from 1) creating a clinic template too limited to meet the needs of the accessing patient population, and 2) the

appointment specialist not being familiar with access time associated with that appointment type.

Efforts have been made by CSD and CHCS personnel to narrow the appointment types available in the CHCS data base to three basic categories of acute (urgent care needed within 24 hours), routine (follow-up care needed within 7 days), well visit (physical examination, etc. needed within 30 days). This narrowing of appointment types at EACH allows the careline administrators to track availability of appointments more easily and make timely suggestions to template changes. Also this consolidation eliminates confusion on the part of appointment specialists with respect to time associated with each appointment type.

There are many scenarios and options that an appointment specialist can experience. The options indicated here are not "sanctioned" options, but they cannot be ignored. One option which should never be used (but is) is for the appointment specialist to ask the caller to call back on another day because the clinic personnel have not created the appointment schedule far enough out into the future, i.e. an appointment schedule should be 30-45 days out. Another option, which should not be used unless there is an emergency, is for the appointment specialist to tell the caller to access care through the emergency room. The appropriate action to be taken when the MTF is unable to meet designated access standards is to send patients outside the organization to the managed care contractor's preferred provider network (PPN).

Literature Review

There are few articles demonstrating how to measure access to care, other than the traditional method of a survey and calculating the time between when the appointment was

booked and the actual time from when the patient was seen by a physician. The following literature review demonstrates the importance of this study in four ways: 1) it illustrates the growing reliance upon electronic information; 2) it emphasizes the need for accurate information for performance reporting, e.g. MHS Performance Report Card; 3) .it emphasizes the importance of access within the MHS; and 4) it emphasizes the growing importance of improving customer service through the use of the computerized appointment system.

Growing Reliance Upon Electronic Information

In an expert from the book The Digital Economy, author Don Tapscott emphasizes the growing trend towards information technology:

> And will we be couch potatoes watching more TV? Chances are we'll be doing less watching and more interacting. The TV is converging with the home computer and telephone to create the information appliance that is intelligent, interactive, and multimedia. This appliance will look a lot more like a computer than a TV. The number of houses with PCs is growing phenomenally every year. In 1993, 21 million households had PCs; in 1994 the number reach 30 million, a 43 percent increase; by the end of 1995 the number reached 45 million. Networking has grown even faster. In 1994 the number of home PCs with a modem was about 5 percent. By the end of 1995 this had doubled to 10 percent. We can expect that the number will continue to double until 1998 when most all will be connected (page 14).

Mr. Tapscott remarks that this growing increase in the interaction of consumers through the use of PCs has changed and will continue to change the way businesses, government, communities, and social interest groups conduct business.

The information super highway is the key to economic and social success. Today, we connect to many business via the Internet. Many business and other organizations provide information on a myriad of issues. Strategic Management of Health Care Organizations support assertions that economic and social success are tied to information systems. Specifically, the author ties medical information systems to the success of the medical community:

> To satisfy customers, provide a quality product, and do it with great cost efficiencies, today's health care managers need the most current information to make decisions affecting the long-term viability of their organizations. Many community and urban hospitals have closed because they cannot manage costs. A variety of additional reasons can be noted, but accurate information could have assisted the manager - if nothing else at least when the operation should have been closed to minimize the losses (page 367).

Importance for Performance Reporting

As eluded to earlier in this study, the MHS Performance Report Card is one tool that demonstrates how well MTFs perform in relation to others and it is also the tool that drives future funding for the different branches of the services. Information accuracy is critical to the economic survival of MTFs around the globe. More crucial is how managers respond to the report card itself. Are managers willing to strategically plan for information systems improvements and take actions to improve data collection quality? Civilian HMOs are

under pressure by consumers and employers to report on performance. The report card is becoming increasingly important given the climate of health care reform and of fierce competition between managed care organizations (Harris, 1994).

Information, and how it is collected and used, can determine how health care organizations will survive in the future. Consumers are more educated with regard to health care than they were twenty years ago. Because of this knowledge, consumers are not going to support a health care system that cannot meet their needs.

Importance of Access to the MHS

In an article entitle CHAMPUS Revamped: Doing Managed Care the Military Way beneficiaries under TRICARE, who have long been accustomed to virtually free care, have complained anxiously about new cost-sharing provisions, barriers to access, and inequities in coverage and care in the new program (1996).

In the Navy Times an article titled TRICARE: Better But in Need of Improvement, Dr. Edward Martin, the Deputy Assistant Secretary of Defense for HA was asked a question regarding the concerns of some beneficiaries that scheduling of appointments remains a big concern under TRICARE. His response was that "if you are a TRICARE Prime enrollee, my understanding is that 95 percent to 97 percent of the appointments are being made on time" (p.28, 1996).

In The Mercury article titled Joseph Wants Better Access for Patients in TRICARE, Dr. Stephen Joseph, Assistant Secretary of Defense of HA stated that preliminary feedback from a regional patient survey indicated high satisfaction with the TRICARE Health Plan, but the survey suggested that access by the way of making appointments remained problematic (1997).

Importance of Computerized Appointment System

As medical technology continues to accelerate, hospitalization as a part of treatment continues to decrease. As we approached the nineties, many of the inpatient services transitioned to the outpatient setting, i.e. same day surgeries. As a result the more progressive hospitals converted inpatients wards to outpatient clinics to accommodate the growing trend as well as to accommodate growing budget constraints. This increase in ambulatory services required a more efficient system for scheduling outpatient services. Born out of need, the automated appointment system for clinic scheduling began to replace the manual scheduling system. One noted medical center, the University of Michigan Medical Center (UMMC), recognized this need to become more efficient and productive. In 1991, Dr. Colley, et el., (UMMC), describes their new computerized appointment scheduling system as state-of-the-art. The UMMC system allows for several important functions to be executed: 1) booking processing functions, 2) resource processing functions, and 3) batch functions. The UMMC system was also considered integrated because the system provided a monthly utilization report that was a source of information with regard to ambulatory patient scheduling. One of those areas was titled "Appointment Availability" which is defined as the average time between the date an appointment was scheduled and the actual appointment date was used. This was used as an indicator of how long patients waited for an appointment (1991, Coffey et el.). The article's importance to this study is that Dr. Coffey and his associates provide support by placing emphasis on automating the patient scheduling process. Through automation, managers are able to provide better customer service, to be more flexible, and among many other advantages, to manage productivity. Automation gives the organization the ability to be flexible in a chaotic

environment, which is a distinct advantage for managed care organizations when competing for patients and health care dollars.

Craig Richardville (1993), emphasizes the importance of the automated central outpatient appointments service as a one-stop telephone call to scheduling for the physician, their offices and for patients. However, he discusses another variable that contributes to scheduling success and patient satisfaction to appointment access; the scheduling technician. Richardville emphasizes the importance of the scheduling technician in that the technician must review and adjust appointment template schedules to prevent potential problems such as overbooking, not allotting enough time for an appointment, scheduling conflicts, etc. In order for outpatient central appointments to succeed, it requires that booking or appointment specialists interact and understand each of the clinics for which they make appointments.

Purpose

The purpose of this descriptive study is to simply answer the question, "what percent of our beneficiaries who make contact with an appointment specialist are unable to receive an appointment?" The data collected demonstrates whether there is the need for information system changes to CHCS. This study is concerned with the question of "what percentage" making it a descriptive study as opposed to "why" which is indicative of a causal study (Cooper et el., 1995).

The goal of this study is to quantify the problem of our current data gathering tools and also support recommendations offered to management to improve the system. The objectives of this study are:

1) demonstrating through the data collected that there is a segment of the population whose lack of access is not being counted;

2) demonstrating that changes in the existing information systems can capture this data in order to derive more accurate metrics of access to care, i.e. proposing changes in the data fields in the PAS module of CHCS.

METHODS & PROCEDURES

In this section of the study, two areas are discussed: 1) the survey instrument, and 2) the study plan. Item one describes and justifies the instrument chosen, and item two discusses the different phases of the study to include how the survey was conducted.

The Survey Instrument

The use of a survey was chosen as the primary quantitative technique in conducting this study. Currently, when a beneficiary contacts the appointment specialist there is no better method in place that will determine if a beneficiary was denied access to an appointment, other than by marking "yes" or "no" at the specific time the attempt was made.

A Patient Access Survey (Figure 5) was constructed to capture data required to answer the research question.

The appointment specialists at TriWest, the managed care contractor, conducted the survey with this tool. The survey's columns and rows are labeled for ease of use by the appointment specialists. The appointment specialist checks the appropriate answer with respect to each caller. For example did the beneficiary caller:

1. request an appointment with EACH, the Air Force Academy Hospital or the Peterson Air Force Base Clinic.

2. request an acute (urgent), routine (non-urgent) or well appointment.

3. receive an appointment with their PCM or not with PCM; or did they not receive an appointment because none were available or because they would not take the offered appointment.

PATIENT ACCESS SURVEY
FIGURE 5

Today's Date _____	1	2	3	4	5	6	7..	..40
Which Medical Treatment Facility?								
Peterson AFB								
AF Academy								
Evans								
Type of Appointment Requested -								
Acute (24 hours)								
Routine (7 days)								
Well Exam (30 days)								
Did you book the Appointment?								
IF YES, THEN								
With PCM								
Not With PCM								
IF NO, THEN								
No appointment available								
Patient said "no" to offered appointment								

Each sheet is enlarged for easy viewing and contains forty columns to accommodate 40 callers. A typical sheet used by the appointment specialists is displayed as Appendix A.

In the "RESULTS" section of this study, the survey is converted into a table where the column and row labels are abbreviated, but the substance is the same.

Planning the Study

The study was planned with the two stated objectives as the primary focus. The study was conducted in three phases which are described below.

Phase I - Developing the Survey

During this phase the survey in Figure 5 was developed in conjunction with TriWest. The survey had to be as simple as possible in order not to interrupt services provided to our beneficiaries or callers during the scheduling process. The appointment specialist conducted the survey during each call. The survey does not require the appointment specialist to ask the caller any questions. TriWest agreed to do this survey because I met the above criteria.

Ethics - Based on my experience with the contractor, I believe everything was done properly and above board. The information provided to me by TriWest during this survey is for educational purposes only and is to be used to support the research question. Additionally, all information obtain with regard to the patient is kept confidential.

Phase II - Conducting the Survey

TriWest conducted the survey on week days during the month of January 1998. Since TriWest receives an average of 1,250 calls per day, and received approximately 23,750 calls (1,250 x 19) during the month of January. There were nineteen week days in the month of January minus the two federally observed holidays, New Year's Day (1 January) and Martin Luther Kings, Jr's Birthday (19 January). In order to minimize potential disruption of service, two teams of twelve appointment specialists each conducted the survey at different times. During weeks one and two, the first team conducted the survey and during weeks three and four, the second team conducted the survey.

The survey's purpose is to answer the study's proportion question, "what percent of our beneficiaries who make contact with an appointment specialist are unable to receive an appointment?" In order to calculate the sample size for this survey that involved a proportions question, I concluded that: 1) if greater than 5% of the population (prime

enrollee callers) could not get an appointment, then as an MTF we failed to meet the MHS Report Card "Satisfaction with Access to Appointments" standard of 95%; 2) if greater than 10% of the population (prime enrollee callers) could not get an appointment, then we did not meet EACH CSD access standards of 90%; and, 3) if this study can illustrate that greater than 10% of the population (prime enrollee callers) could not get an appointment, then measuring access to care through changes in the CHCS would be beneficial. The calculation for sample size was based on whether more than 10% of the population would be unable to schedule an appointment. The following shows the calculations for sample size for this study (1995, Cooper, et el.):

$n = (pq/\sigma p2) + 1$	The equation to calculate sample size for the proportions question (pg. 216). The small 2 in this equation denotes "squared."
$n = 112$	The size of the sample calculated using the equation. $112 = (.10/.032) + 1$ $112 = (.10/1111.11) + 1$
$p = .11$	The proportion of the population not able to get appointments.
$q = .89$	The proportion of the population able to get appointments.
± 0.05	Desired interval range within the population proportion is expected (subjective decision).
$1.96\sigma p$	95 percent confidence level for estimating the interval within which to expect the population proportion (subjective decision).
$\sigma p = 0.03$	Standard error of the proportion (0.05/1.96)
$pq = .10$	Measure of sample dispersion (used here as an estimate of the population dispersion).

The calculated sample size for this study was at least 112 per day over the course of 19 days. If the study concludes that greater than 10% of the population could not get an

appointment, then we can be 95 percent confident in the findings with a margin of error of ± 5 percent.

The study was random in that each enrollee had the same chance of being selected. For example, a Prime Enrollee calls TriWest at the telephone number that is provided to each beneficiary upon enrollment. The calls were distributed through a central computer system to the next available appointment clerk. One of twenty-four appointment specialists received the calls. Of the twenty-four, only twelve conducted the survey about the caller. So each caller had an equal chance of being surveyed.

Reliability - The reliability of the study with regard to stability is difficult with any survey. Particularly with this survey, the appointment specialists had one opportunity to survey the encounter with the caller. Time could not be spent on the survey at the expense of customer service, which was the main reason why the instrument was constructed for ease of use. Reliability also considers equivalence in the surveying. There were twenty-four appointment specialists who were all different in perspective and performance (fatigue and motivation) which played a factor in reliability. For example, one clerk made drawings of unhappy faces on the top of the survey sheet to show her dislike for having to do the survey. Another clerk did not follow directions, which was illustrated by her checking both "yes" and "no" for the question of "did you book the appointment?" As a result, one hundred and forty three surveys (or callers) were not done correctly and could not counted.

Another area considered with regard to reliability was internal consistency. The instrument questions were constructed to be as consistent as possible in that the choices were mutually exclusive and categorically exhaustive. Therefore, the appointment

specialists had one choice per question. However, to ensure there was no confusion and that the survey was conducted in a consistent manner, verbal and written instructions were given to each of the teams. Initially the survey seemed difficult due to the appointment specialists lack of experience with the survey instrument. Also, it is important to remember that appointment specialists do get tired and make mistakes throughout the normal course of the day. The setting for the survey was the same as the normal daily operating conditions for each of the specialists.

Validity - The validity of the instrument was met in this study. The questions in the instrument covered the topic under study. This survey went through several iterations to ensure the survey answered the research question. The first survey was critiqued by one of the chief administrators in EACH CSD for relevance and revised. The revised, second survey was critiqued by the TriWest Regional Officer Manager to ensure it was possible to conduct this survey. Naturally, the administrator for EACH CSD wanted as much information as possible while the Officer Manager for TriWest wanted less (less disruption for his appointment specialists). However, both were concerned about answering the research question. They both then reviewed the final draft of the survey to critique it for relevance and the availability of the data. Figure 5 indicates the final agreed upon survey format.

Another area of validity to consider is the freedom from bias or conflict. The appointment specialists do not work for the DoD but for a tax paying (for-profit) managed care contractor. Their paycheck and bonuses are related to productivity. Their willingness to conduct a survey for a DoD graduate student project might well be in conflict. As stated earlier, two appointment specialists communicated their feelings about having to conduct

this survey. If you compound that with the pressures to complete appointment transactions as soon as possible, then this conflict raises concerns about the validity of the survey answers. However, many of the appointment specialists were more than willing to participate in this survey.

Phase III - Conducting the Analysis

During this phase all the data is compiled in a spread sheet format. I arranged the data to be displayed showing the proportions for the Pikes Peak Region and for Evans Army Community Hospital. The purpose of displaying both sets of data is to show how; 1) the region is performing as a whole since the managed care contractor serves the region, and 2) EACH performs within the region and against other measurement tools, i.e. CSD USR, and MHS Performance Report Card.

RESULTS

During the month of January, TriWest received a total of 29,133 calls. Not all of these calls were for appointments. However, I was not able to obtain a list with a breakdown of calls because the telephone system is not programmed to give specific information that would assist in this study. Of the 29,133 calls, we surveyed 6,393 or 22% all the incoming calls in the month of January. Appendix A displays data from the daily surveys which comprises the entire Pikes Peak Region, i.e. Peterson Air Force Base, Air Force Academy, and Evans Army Community Hospital. Refer to Table 4 for data and calculated percentages. The research questions was "what percent of our beneficiaries who make contact with an appointment specialist are unable to receive an appointment?" Note that 11% of the beneficiaries within the Pikes Peak Region in the month of January 1998

PATIENT ACCESS SURVEY RESULTS
PIKES PEAK REGION
TABLE 4

Jan-98	NUMBER OF CALLS	PERCENTAGE OF CALLS
MTF		
Peterson AFB	1608	23%
AF Academy	1926	28%
Evans	3405	49%
TOTALS	6939	100%
Type		
Acute (24 hours)	2985	43%
Routine (7 days)	3084	44%
Well Exam (30 days)	870	13%
TOTALS	6939	100%
Scheduled		
IF YES, THEN		
With PCM	4206	61%
Not With PCM	1812	26%
IF NO, THEN		
None Available	783	11%
Patient Refused	138	2%
TOTALS	6939	100%

could not get an appointment because none were available. Two percent of the beneficiaries refused offered appointments due to conflicts such as time, date, and/or personal reasons. The answers to the proportions question for the Pikes Peak Region would be: 1) greater than 5% of the population (prime enrollee callers) could not get an appointment which failed to meet the MHS Report Card "Satisfaction with Access to Appointments" standard of 95%; 2) greater than 10% of the population (prime enrollee callers) could not get an appointment which failed to meet EACH CSD access standards of 90%; and, 3) this study illustrates that greater than 10% of the population (prime enrollee callers) within the Pikes Peak Region could not get an appointment which supports changes in CHCS as beneficial. Other information provided by the survey indicates that of the three MTFs, TriWest receives more calls for appointments at EACH than the Air Force Academy hospital and the Peterson Air

Force Base clinic, respectively. The appointment type most requested is the Routine (non-urgent within 7 days), followed closely by Acute (urgent within 24 hours), and then by the Well Exam (within 30 days). If the appointment specialists were able to make an appointment, were they able to make that appointment with the beneficiaries PCM? The survey found that 61% of the time patients were able to see their physician or the panel for which they are enrolled.

Of the 29,133 calls, EACH received 3,405 requests for appointments or 12 % of all incoming calls in the month of January. And, of the calls surveyed (6,939) in the month of January, 49% of the calls were for appointment requests at EACH. Appendix B displays data from the daily surveys for EACH. Refer to Table 5 for data and calculated percentages. In answer to the research questions "what percent of our beneficiaries who make contact with an appointment specialist are unable to receive an appointment?", 9% of EACH's beneficiaries in the month of January 1998 could not get an appointment because none were available. Two percent of the beneficiaries refused offered appointments. The answers to the proportions question for EACH would be: 1) greater than 5% of the population (prime enrollee callers) could not get an appointment which failed to meet the MHS Report Card "Satisfaction with Access to Appointments" standard of 95%; 2) greater than 5% and less than 10% of the population (prime enrollee callers) could not get an appointment which met the EACH CSD access standards of 90%; and, 3) this study illustrates that less than 10% of the population (prime enrollee callers) could not get an appointment which would not support changes in the CHCS as beneficial.

PATIENT ACCESS SURVEY RESULTS
EVANS ARMY COMMUNITY HOSPITAL
TABLE 5

Jan-98	NUMBER OF CALLS	PERCENTAGE OF CALLS
MTF		
Evans	3405	49%
Type		
Acute (24 hours)	1436	42%
Routine (7 days)	1502	44%
Well Exam (30 days)	467	14%
Scheduled		
IF YES, THEN		
With PCM	2023	59%
Not With PCM	1004	30%
IF NO, THEN		
None Available	322	9%
Patient Refused	56	2%

Evans specific information provided by the survey indicates that the appointment type most requested is the Routine (non-urgent within 7 days), followed closely by Acute (urgent within 24 hours), and then by the Well Exam (within 30 days). If the appointment specialists were able to make an appointment, were they able to make that appointment with the beneficiaries PCM? The survey found that 59% of the time patients were able to see their physician or physician extender.

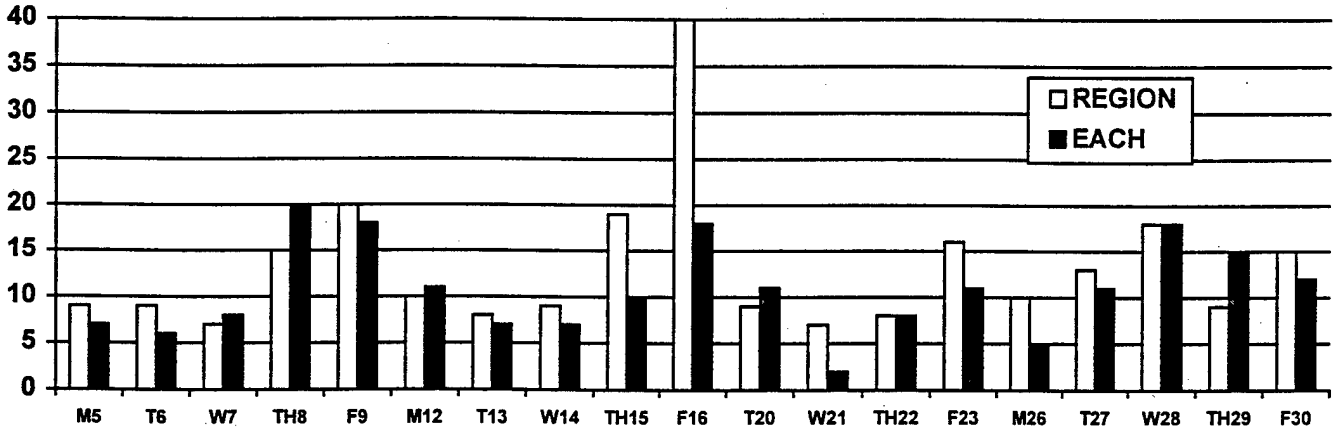
Another result to consider is if each day were studied separately as displayed in Table 6. The answers to the proportions question for the Pikes Peak Region would be that: 1) during all 19 days greater than 5% of the population (prime enrollee callers) could not get an appointment, which failed to meet the MHS Report Card "Satisfaction with Access to Appointments" standard of 95%; 2) during 8 out of 19 days (42%) greater than 10% of the population (prime enrollee callers) could not get an appointment, which failed to meet EACH CSD access standards of 90%; and, 3) this study illustrates that greater than 10% of

the population (prime enrollee callers) could not get an appointment which support changes in CHCS as beneficial.

PIKES PEAK REGION & EACH:
APPOINTMENTS DENIED
TABLE 6

NO APPOINTMENTS AVAILABLE																			
DAYS & DATES	M5	T6	W7	TH8	F9	M12	T13	W14	TH15	F16	T20	W21	TH22	F23	M26	T27	W28	TH29	F30
REGION	9%	9%	7%	15%	20%	10%	8%	9%	19%	40%	9%	7%	8%	16%	10%	13%	18%	9%	15%
EACH	7%	6%	8%	20%	18%	11%	4%	7%	10%	18%	11%	2%	8%	11%	5%	11%	18%	15%	12%

PIKES-PEAK REGION & EACH:
APPOINTMENTS DENIED
FIGURE 6



If each day were considered for EACH the answers to the proportions question would be: 1) during 17 out of 19 days (89%) greater than 5% of the population (prime enrollee callers) could not get an appointment, which failed to meet the MHS Report Card "Satisfaction with Access to Appointments" standard of 95%; 2) during 10 out of 19 days (53%), greater than 10% of the population (prime enrollee callers) could not get an appointment, which failed meet EACH CSD access standards of 90%; and, 3) this study

illustrates that greater than 10% of the population (prime enrollee callers) could not get an appointment, which supports changes in CHCS as beneficial.

DISCUSSION

The data collected and information produced during this study met the first objective by demonstrating that there is a segment of the population whose lack of access is not being counted. In this discussion, several areas were covered to meet the second objective and purpose of this study. The discussion section is divided into three sections: 1) data results and limitations of the study; 2) what specific changes to CHCS are recommend; and 3) what is the process for making these recommended changes to CHCS.

Data Results and Limitations

After reviewing the results, the question that should be addressed is "do these results warrant system changes, or are current methods sufficient?" As it stands now, there are few studies that focus on how many beneficiaries try to access the system through telephone lines. Most studies address issues such as: 1) how long a patient must wait in the clinic before seeing a physician, and 2) the length of time between when the patient booked the appointment and the actual day seen. There are also systems of measuring how long a patient waits on the telephone line before speaking to an organization's representative. The fact that few articles exist about appointment accessibility through the appointment scheduling process may be an indication that this one area is too difficult to measure and that allocating resources into measuring an area of this nature is not a priority. When an organization makes strategic decisions regarding information systems upgrades, it must consider where to allocate resources appropriately. In the field of health care information systems, other areas of the hospital often take priority such as the pathology lab, pharmacy,

and resource management. If that is the case, then current methods of measuring access may have to rely on patient perception rather than on more objective measures of data collection. Which brings out another possible indication why few articles exist about measuring the appointment accessibility through the information systems; patient perception is too powerful to ignore. Therefore, current survey methods based on perception could be considered sufficient.

A comparison between the report card results with the access survey results would seem to indicate changes to the CHCS. The MHS Performance Report Card reported that during the month of January 1998 the performance of EACH with respect to "Satisfaction with Access to Appointments" was 76%. If we compared that result with the Patient Access Survey (91%), we know that at least 9% of the population could not get appointments. Nine percent of the population could have easily contributed to the low "Satisfaction with Access to Appointments" rate reported during the month of January 1998. Other possible factors that contributed to a 24% dissatisfaction rate reported in the January are those patients who may have had long waits prior to seeing their PCMs, those who had to see other than their PCM, and those told to access the MTF through the Emergency Room (ER). The recommend changes to CHCS (Figure 3) assist in isolating dissatisfaction with denial to appointments. The Patient Access Survey method (modification to CHCS) can also assist EACH administrators in making decisions immediately regarding appointment problems, which has the potential to make an impact on patient satisfaction and on the results of performance report card.

Limitations to this study include:

1. While conducting the survey, the appointment specialist may not have been as efficient as they normally are when booking appointments. Any amount of delay in customer service caused by this survey could have placed limits on this study. This was not measured in this study.

2. January was the only month I was able to conduct this study with TriWest Healthcare Alliance.

3. Time could not be spent on the survey at the expense of customer service. Therefore, we could not have a more extensive survey instrument. A more extensive survey would have caused a greater access problem.

4. There are twenty-four appointment specialists who are all different in perspective and performance (fatigue and motivation) which may have played a factor in reliability.

5. It was understood by TriWest that Acute means within 24 hours, Routine means within 7 days, and well exams mean within 30 days. If appointment specialist booked patients, but not within the time constraints, it could effect the outcome of those patients not able to get an appointment. An example would be if the appointment specialist booked the patient needing a routine appointment into an acute slot.

Recommended Changes to CHCS

What specific changes could be made to CHCS in order to capture that segment of the population who are denied appointments? The pathway of booking appointments in the software is not difficult to follow and the program changes are easy to make (Sparks, 1998; Wilkerson, 1998; Wyckoff, 1998). To illustrate the changes in the pathway, Figure 3 is broken down into stages. In Step 1, the appointment specialist would access the "Clerk

Clerk Scheduling Menu
STEP 1

Scheduling Menu" and select "Book Appointment" from the options. This option would default to the program to "Booking Search Criteria" as seen in Step 2.

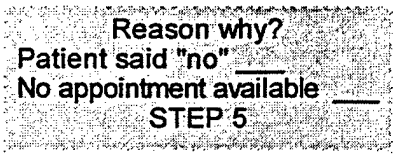
BOOKING SEARCH CRITERIA
STEP 2
Must Select Patient Name

As high lighted in the Step 2 box, the patient's name is no longer an option for the appointment specialist. They must enter the name of the patient before searching for appointments. This mandatory entry would require a change in the program. Both Jim Wilkerson, CHCS Data Base Administrator and Training Coordinator, and Cal Sparks, SAIC CHCS Software Specialist and former programmer for CHCS, stated that this would be an easy change to make. While searching for appointments, the program takes the user into the screen called "Single Patient Booking". In this screen, the program tells the user if an appointment is available. If one is available and the user selects to book the appointment, then the program takes the user automatically to "File Appointment" screen where the patient's name is written to a file. If "No Appointments Available," then the user "(Q)uits" the "Single Patient Booking" screen.

No Appointments Available
STEP 3

Clerk selects "Q" for quit.
STEP 4

The quitting processes put the user back at the "Clerk Scheduling Menu." But the second change to the program would take place at the point of "(Q)uitting" the "Single Patient Booking" screen. When the user "Quits," the change would require that the program write that patient's name to a file called "Denied Access to Appointments." Again, CHCS specialists confirmed that this can be easily done. While the program writes to a file the denial, the program will also ask why the appointment was denied to the beneficiary (the



third change to the program). Selecting "Q" in the "Single Patient Booking" screen is a denial into the system for the beneficiary, but the "Q" is also a prompt for the system to ask the question of "Why?" Step 5 displays only two reasons, but more could be added. Lieutenant Colonel Wyckoff, CHCS Implementation Project Officer (1998) suggested that Step 5 be brought into the program to assist administrators in monitoring the various reason why any appointment specialist would deny beneficiary access. After answering the question in Step 5, the user would "(Q)uit" the screen and return back to the "Clerk Scheduling Menu" to begin again.

The following summarizes the changes to the CHCS program:

1. In the "Booking Search Criteria" screen, change the program to make the patient name mandatory before searching for appointments.

2. When the user "(Q)uits" the "Single Patient Booking" screen, change the program to write the patient name to a file named "Denied Access to Appointments."

3. When the user "(Q)uits" the "Single Patient Booking" screen, change the program to prompt the user in answering the question, "Why was the appointment denied?"

With these changes to the CHCS together with the existing CHCS "Ad Hoc" reports section, managers can generate reports on causal relationships between all types of appointments and the denial of appointments by the appointment specialist. This report will allow administrators make timely decisions about areas such as appointment templates, physician production and panel enrollment.

The Process for Making Changes to CHCS

With regard to whether the process for making changes to CHCS is easy, the answer

would more than likely be no. Currently, each MTF cannot change or reprogram CHCS to meet certain criteria, even though it is possible to change CHCS at the MTF level. According to Larry Ruh and Dolores Melendy (1998) of the United States Army Medical Information Systems and Service Agency (USAMISSA), the general process for making changes are as follows:

1. Send CHCS System Change Request Form (Appendix C) to support center. For EACH the form would go to our Site Manager and then to our region support center, TriService Medical Systems Support Center (TMSSC) at Brooks Air Force Base, Texas.

2. TMSSC would determine if the request is valid and send it to SAIC.

3. SAIC would evaluate how difficult and expensive the project would be. Two possible scenarios exist. For the purposes of this paper, they are called "a" and "b." **a. If the project is expensive and difficult**, then it is sent back to the generating military service for decisions on funding. If the military service wants to fund the project then it goes back to SAIC for a "Design Process Change (DPC)." The DPC is sent to the TriService Review Board at Health Affairs. **b. If the project is relatively inexpensive and not too difficult**, then a DPC is developed by SAIC. Then SAIC goes through informal approval process.

4. Once approved, whether "a" or "b," the project is sent back to SAIC for implementation and testing. Changes are not made immediately; they are made with the next version.

It is important to note that requested changes must be made as an overall systems change. Local changes or program tailoring at the MTF level are generally not authorized because it will cause system operating problems when version upgrades are implemented.

In summary, if the MHS Performance Report Card is the standard of performance for MTFs, then the results of this study showed that the majority of the time during the month of January 1998, we did not meet the 95% standard (9% could not get an appointment). Although beneficiary or customer perception is powerful (survey), administrators should also attempt to measure satisfaction in real time. Medical Treatment Facilities do not have the real time option. They must wait for an agency at a higher echelon to inform the organization how well it is performing. Medical Treatment Facilities have the CHCS program, which has potential to provide real time results. The recommended changes and the mechanism for submitting the changes have been described. Most noteworthy is the concurrence from several technicians on how easy it would be to make these changes to CHCS.

CONCLUSION & RECOMMENDATIONS

The focus of this study is on one of the three variables of the Iron Triad; access. Specific attention is given to how a MTF can measure satisfaction with access to appointments by using the existing health care information system, the Composite Health Care System (CHCS). With specific reference to access, one of the goals of TRICARE is to maximize nationwide availability to care by expanding access and by improving avenues to access through the patient appointment and telephone systems.

TRICARE has become an initiative that embraces managed care principles of high quality and access at the lowest possible cost. Because TRICARE is vital to the MHS success, it has never been more important for our beneficiary population to be more than satisfied with military health care; they must be delighted. Our beneficiaries can be our greatest allies, or our most formidable opponent. With media attention focused on

TRICARE and health care reform, we cannot afford not to keep promises or make false promises through advertising "puffery." Today managed care is under the watchful eyes of the American people, add to that a new round of budget cuts, and our efforts increase to ensure satisfaction with the Military Health System becomes the priority. That effort must begin at point of contact and continue throughout the patient's entire enrollment.

My recommendations regarding this study are to encourage other research efforts regarding the ability to measure appointment access and to submit a CHCS System Change Request Form to make the changes suggested in this study. The Military Health System must remain competitive just as civilian health care organizations must or risk losing beneficiaries to contracted providers (civilian organizations). Evans Army Community Hospital can remain competitive and become the Region's leader in patient satisfaction with increased access. In order remain competitive and increase access satisfaction, military health care administrators must: 1) focus on the point of entry; 2) recommend changes for and modify existing resources; 3) receive information in real time; and 4) take necessary action to achieve all access standards, such as access to system resources, meeting appointment waiting standards and meeting Prime active duty enrollment rates.

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APPENDIX A

PATIENT ACCESS SURVEY FORMAT

Today's Date _____	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Which Medical Treatment Facility?																				
Peterson AFB																				
AF Academy																				
Evans																				
Type of Appointment Requested																				
Acute (24 hours)																				
Routine (7 days)																				
Well Exam																				
Did you book the Appointment?																				
IF YES, THEN																				
With PCM																				
Not With PCM																				
IF NO, THEN																				
No appointment available																				
Patient said "no" to offered appointment																				
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Which Medical Treatment Facility?																				
Peterson AFB																				
AF Academy																				
Evans																				
Type of Appointment Requested																				
Acute (24 hours)																				
Routine (7 days)																				
Well Exam																				
Did you book the Appointment?																				
IF YES, THEN																				
With PCM																				
Not With PCM																				
IF NO, THEN																				
No appointment available																				
Patient said "no" to offered appointment																				

APPENDIX B

PATIENT ACCESS SURVEY DATA
PIKES PEAK REGION

Jan-98	5	6	7	8	9	12	13	14	15	16	20	21	22	23	26	27	28	29	30	TOTALS
MTF																				
Peterson AFB	162	107	140	91	80	169	89	87	51	43	122	87	59	74	99	42	37	44	25	1608
AF Academy	232	129	134	108	97	218	118	73	80	49	149	125	56	61	128	46	49	60	14	1926
Evans	411	291	278	174	189	349	153	163	99	55	278	208	138	127	227	63	61	100	41	3405
TOTALS	805	527	552	373	366	736	360	323	230	147	549	420	253	262	454	151	147	204	80	6939
Type																				
Acute (24 hours)	249	166	196	164	143	311	132	174	109	84	289	186	114	105	248	69	93	109	44	2985
Routine (7 days)	436	279	267	177	164	341	177	113	93	44	210	201	112	130	155	65	37	65	18	3084
Well Exam (30 days)	120	82	89	32	59	84	51	36	28	19	50	33	27	27	51	17	17	30	18	870
TOTALS	805	527	552	373	366	736	360	323	230	147	549	420	253	262	454	151	147	204	80	6939
Scheduled																				
IF YES, THEN																				
With PCM	529	383	361	223	211	451	256	197	102	54	333	238	135	142	264	93	80	101	53	4206
Not With PCM	192	88	137	89	77	188	61	93	77	31	166	144	95	74	140	31	36	81	12	1812
IF NO, THEN																				
None Available	72	50	40	55	73	76	30	29	43	59	47	28	19	43	44	19	26	18	12	783
Patient Refused	12	6	14	6	5	21	13	4	8	3	3	10	4	3	6	8	5	4	3	138
TOTALS	805	527	552	373	366	736	360	323	230	147	549	420	253	262	454	151	147	204	80	6939

APPENDIX C

PATIENT ACCESS SURVEY DATA
EVANS ARMY COMMUNITY HOSPITAL

Jan-98	5	6	7	8	9	12	13	14	*15	*16	20	21	22	23	26	*27	*28	*29	*30	TOTALS
MTF																				
Evans	411	291	278	174	189	349	153	163	99	55	278	208	138	127	227	63	61	100	41	3405
Type																				
Acute (24 hours)	125	104	91	65	71	139	54	80	47	21	162	90	62	42	132	40	42	44	25	1436
Routine (7 days)	214	138	132	88	82	168	73	59	38	13	99	112	61	79	74	20	12	35	5	1502
Well Exam	72	49	55	21	36	42	26	24	14	21	17	6	15	6	21	3	7	21	11	467
TOTALS	411	291	278	174	189	349	153	163	99	55	278	208	138	127	227	63	61	100	41	3405
Scheduled																				
IF YES, THEN																				
With PCM	263	219	166	99	112	194	112	94	43	26	153	120	61	70	151	39	40	32	29	2023
Not With PCM	115	53	79	38	43	108	31	56	43	19	92	81	64	41	61	10	10	53	7	1004
IF NO, THEN																				
None Available	30	18	21	34	32	40	6	12	10	10	31	4	11	14	11	7	11	15	5	322
Patient Refused	3	1	12	3	2	7	4	1	3	0	2	3	2	2	4	7	0	0	0	56
TOTALS	411	291	278	174	189	349	153	163	99	55	278	208	138	127	227	63	61	100	41	3405

APPENDIX D

CHCS SYSTEM CHANGE REQUEST FORM

Site: _____ **Phone Number:** _____

Originator: _____ **TMSSC Ticket Number:** _____

Priority: _____ **Emergency** _____ **Urgent** _____ **Routine** **(Check One)**

Application/Version: _____ **Problem Date: (YYMMDD)** ___/___/___

Title of the Problem:

_____

_____

_____

Menu Path:

_____

Subsystem: _____

Brief description of how the current software functions:

_____

_____

_____

Specific detailed description of what change is requested:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____